AK-104

REV: A05-11-1118

ADVANCED KEYS

Smart Keyless Entry System

INSTALLATION GUIDE

Product Features:

- Smart Keyless Locking/Unlocking
- Compact Sized Smart Keys
- Dual-Antenna Setup
- Bypass Transponder RFID Cards
- Vehicle Anti-Theft Function
- Ignition Controlled Lock / Unlock
- Auto Vehicle Battery Power Saving
- Door-Not-Closed Reminder
- Smart Key Battery Low Reminder
- Locking-Delay Function
- Compatible with Push-Start Ignition
- Auto Window Closing Output

FC CE*

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TABLE OF CONTENTS

Table Of Contents 2

Product Contents 2

Warning and Safety Information 3

- Safety Precautions 3
- Pre-installation Considerations 3

Connections 4

- Main Harness Wire Descriptions 4
- Access Harness Wire Descriptions 5
- Controller Wiring Diagram 6

Installation 7

- Installation Overview 7
- Installation Note 7
- Programmable Features 7
- Antenna Installation 8

Frequent Asked Questions 9

Smart Key Programming Procedure 10

Closing Up 11

References Information 11

- Specifications 11
- Product Registration 11
- Warranty 12
- FCC And Canadian Compliance 12

PRODUCT CONTENTS

The following list of components are included in this system:

1 − Control Unit
2 − Smart Key Fob
1 − Main Harness (8-Pin)
1 − Accessory Harness (7-Pin)
1 − Dual Colour LED Indicator
1 − Front Antenna Coil
1 − Rear Antenna Coil
1 − Bypass Antenna
2 − Bypass Transponder Card
1 − Starter Disable Relay
1 − User Manual/Installation Guide

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WARNING AND SAFETY INFORMATION

PRODUCT SAFETY AND LEGAL DISCLAIMER

- This product shall be installed by a certified technician therefore a certain level of competence and knowledge are therefore assumed when reading this guide.
- This guide is provided as a GENERAL installation instructions and vehicle subjected to installation maybe different.
- This product is designed based on vehicle regulatory standard. Please observe your local public road traffic law and regulations prior to installation.
- Exercise due-diligence when installing this product. The manufacturer and distributors of this product will not accept any vehicle damage or personal injury resulting from the installation of this product. Installation of this product is acceptance of this statement and releases the manufacturer/distributors of this product from any direct or indirect liabilities.
- Once installation is complete, please return this guide along with other documentations included in this product back to customer for future reference. The manufacturer/distributors of this product does not guarantee this particular version will be available at a later date.

PRE-INSTALLATION CONSIDERATIONS

- Carefully read and understand the User Manual, Installation Guide and Electrical Service Information for the subjected vehicle before begin work.
- Install in a well-lit, dry, covered area away from the elements and keep at least one window open all time during installation. Do not leave key inside ignition switch and /or detection range. Prepare all tools required for the installation. Special tools maybe necessary depending on vehicle.
- Verify the vehicle has proper grounding and does not have any outstanding electrical/functional issue prior to installation.
- To avoid short circuit, it is recommended to pull-out related fuses before installation and put them back when installation is complete.
- Only locate necessary wires related to the installation (most required wiring are under driver dash/kick panel areas) and connect to the unit according to the wiring diagram. Use a Multimeter to verify and confirm wire's function, polarity before connecting or disconnecting. We strictly prohibit testing or modifying the vehicle's ECU, airbag and ABS systems.
- Begin function tests on the system after verifying and ensuring all wires have been connected correctly and insulated properly.

CAUTION

DO NOT power up the module before it is properly grounded. Should the unit be powered before being grounded, serious damage to internal components could occur.

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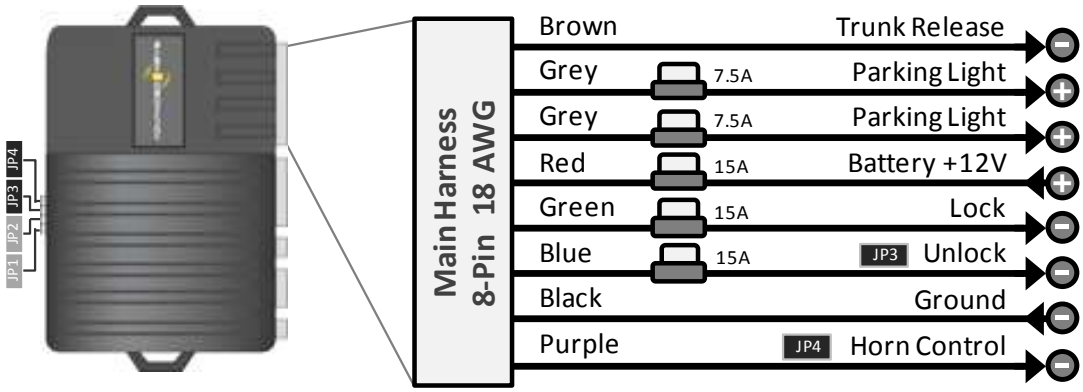
MAIN HARNESS WIRING DESCRIPTIONS



Wiring Description:

Brown	OUTPUT	–	500mA	**Trunk Release**

Connect to the negative side of the trunk release trigger. This output will provide 1 second pulse when UNLOCK button is pressed for 2 seconds. (This function is disabled when ACC input is ON)

Grey	OUTPUT	+	7.5A	**Parking Light x2**

Connect to the positive side of parking lights or the hazard light switch for same effect.

Red	OUTPUT	+	15A	**Battery +12V**

Connect to a +12v source. Ensure that the OEM source wire used is fused for more than 15A.
Note: When no suitable +12V source available (where current capacity is less than 15A) use vehicle's interior fuse junction box or route directly from battery B+ connection.

Green	OUTPUT	–	15A	**Lock**

Connect this output directly to the negative-triggered door lock signal wire.

Blue	OUTPUT	–	15A	**Unlock** JP3

Connect this output directly to a negative-triggered door unlock signal wire.
Note: This system outputs a single unlock pulse by default. Jumper (JP3) provides a double unlock pulses output option for vehicles that require a two consecutive unlock-pulse to unlock/disarm or to bypass the Driver Door Priority Unlock function to unlock all doors.

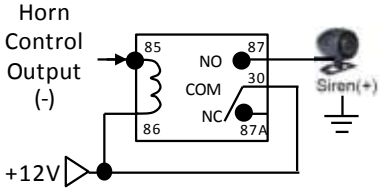
Black	OUTPUT	–	15A	**Ground**

Connected to bare, unpainted metal on chassis. It is recommended to use a factory ground bolt rather than a self-tapping screw. Screws tend to get loose or rusted over time and lead to erratic electrical problems.

Purple	OUTPUT	–	500mA	**Horn Control** JP4

Connect to the negative side of horn for audio notification.
Note: This system is programmed for muted Lock/Unlock operation by default. If audio notification is desired for arming and disarming; connect Horn Control output to a siren* and change the jumper setting (JP4) to Siren Output option (Refer to Horn or Siren Mode in Programmable Features).
Note: If siren control is a positive type or require more than 500mA to operate; add a relay according to the diagram on the right to convert output to a positive type.

Negative (-) to Positive (+) Output Conversion



*Siren not included

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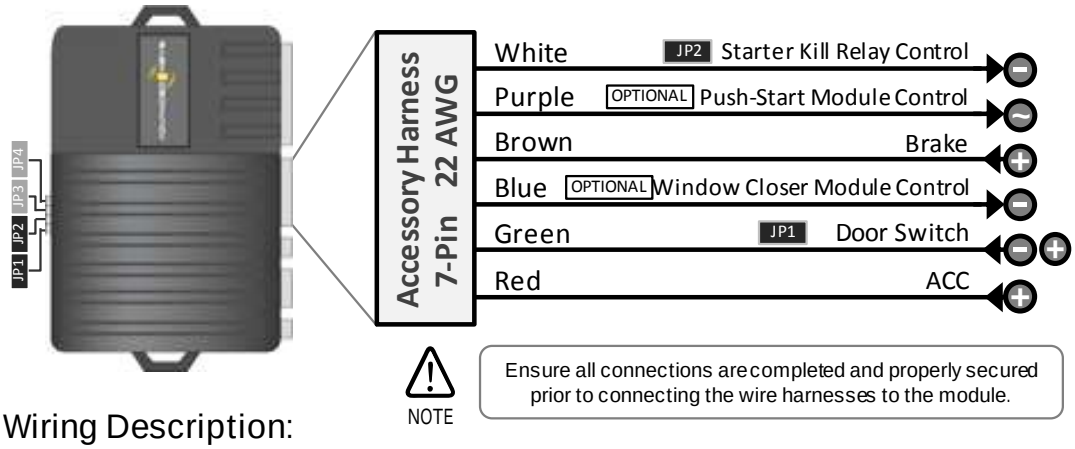
ACCESSORY HARNESS WIRING DESCRIPTIONS



NOTE

Ensure all connections are completed and properly secured prior to connecting the wire harnesses to the module.

Wiring Description:

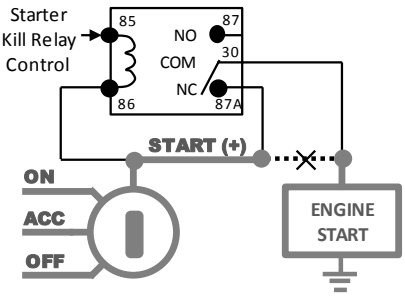
White	OUTPUT	–	500mA	**Starter Kill Relay Control** JP2

(Starter Kill Relay is not required if installed with AK-PSB05)
Depending on jumper (JP2) selection this output can be used for:

Starter Kill Relay Control (Default) – Also known as Ground-When-Armed. While armed (Smart Key not detected or LOCK button pressed) this output provides a constant GND to disable the starter circuit when an unauthorized ignition is commenced. Connect the Starter Kill Relay according to the wiring diagram on the right.

Ground-When-Disarmed – Provides a GND signal while disarmed. (Smart Key is detected or UNLOCK button pressed) This output can be used as an enable signal to an immobilizer bypass or known as Ground-When-Running. Alternatively this output can connect to any system that requires an input signal when a Smart Key is sensed.

Starter Kill Relay (Included)



Purple	OUTPUT	~	100mA	**Push-Start Module Control**

Connect to the "Controller Enable Input" on the optional Engine Push-Start Ignition Controller.
This output provides an encrypted signal to the Engine Push-Start Ignition controller only when system sense a valid Smart Key or disarmed via the UNLOCK button or from the Bypass Transponder Card.

Brown	INPUT	+		**Brake**

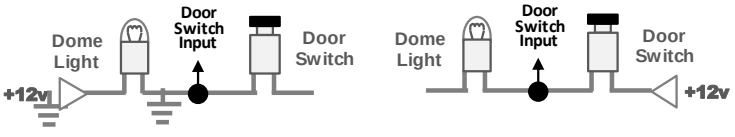
Connect to the brake pedal switch that output +12v when brake is applied, GND or float when released.
Note: This input is required for Smart Key programming and Ignition-Controlled Lock function.

Blue	OUTPUT	–	100mA	**Window Closer Module Control**

Connect to the optional Auto Window Closer Module trigger input.

Green	INPUT	–		**Door Switch** JP1

Connect to vehicle's negative-triggered "door open" signal wire directly. Change jumper (JP1) to Positive Door Trigger if door switch is a positive-triggered type.

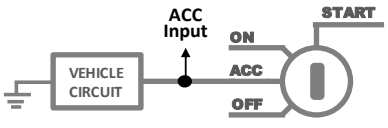


(Default) Negative Door Trigger (-)

Positive Door Trigger (+)

Red	INPUT	+		**ACC** REQUIRED

Required for Remote Start option This input must be connected to a +12v source when ignition key is in the ACC position. Note: With this input active, controller will stop search for the Smart Keys to conserve key's battery and avoid unintended lock actuation while the vehicle is running.



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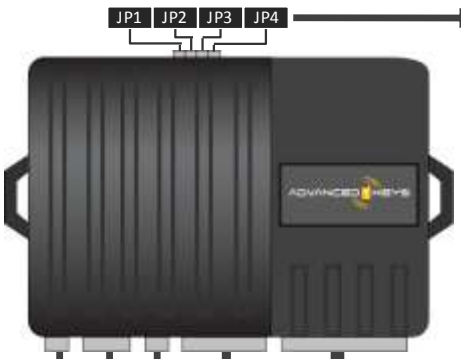
CONNECTIONS

CONTROLLER WIRING DIAGRAM

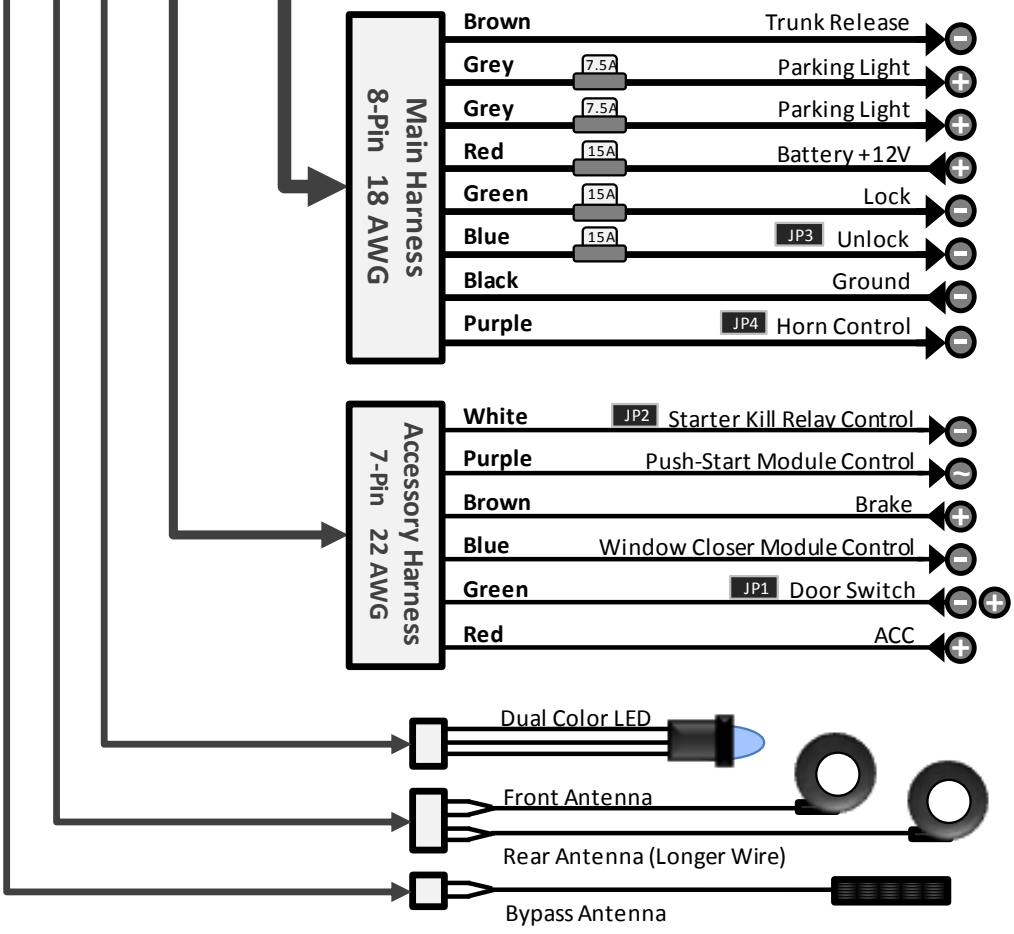


Jumper Settings:

	Default Settings	Optional Settings
JP1	Neg.(-) Door Trigger	Pos.(+) Door Trigger
JP2	Ground-When-Armed	Ground-When-Disarmed
JP3	Single Unlock Pulse	Double Unlock Pulses
JP4	OEM Horn Output	Siren Output

Legend:

Input | Output | Positive Type | Negative Type | Frequency Type | In-Line Fuse



WARNING: Manufacturer/Distributors of this product will not be responsible for any electrical damage resulting from improper installation of this product, be that either damage to the vehicle itself or to the device. This device must be installed by a certified technician for this guide has been written for properly trained technicians; a certain level of skill & knowledge is therefore assumed. Review this installation guide and vehicle's service manuals before install.

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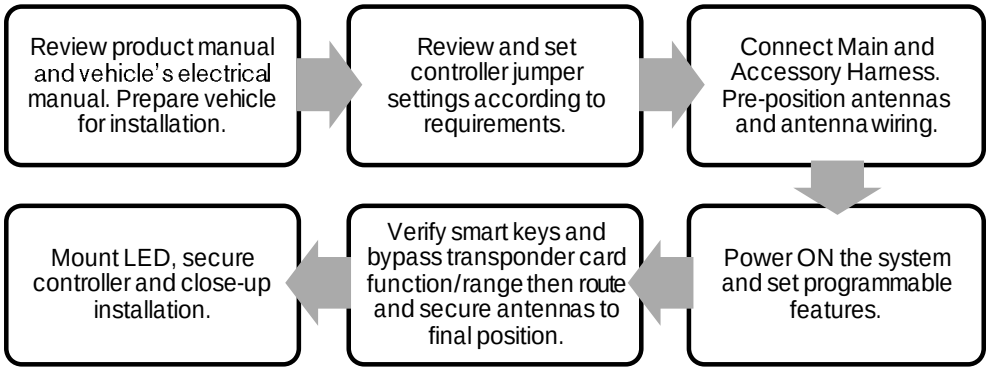
INSTALLATION

INSTALLATION OVERVIEW

Use following steps as a guide to install this system:



INSTALLATION NOTES

- For vehicles equipped with factory or aftermarket alarm/remote start, it is possible to install this system without the anti-theft alarm and remote start functions. (Refer to User Manual on how to disable Alarm Function) Connect BATTERY, GROUND, LOCK, UNLOCK, ACC, BRAKE and ANTENNAS for Smart Keyless Entry function only.
- Ensure the ACC(+) input is connected. It is required for remote-start function and to conserve the Smart Key's battery while vehicle is running.
  Avoid leaving the Smart Key inside or near the detection range for extended periods of time, for it will remain in constant communication with the controller while vehicle is not running, thus shorten Smart Key's battery life.
- It is recommended to connect the DOOR SWITCH input to the vehicle. This system will have a better remote sensing performance when it is aware of the door status.

PROGRAMMABLE FEATURES

The following features can be adjusted according to customer's requirements:

Horn or Siren Mode

Under default JP4 "OEM Horn" setting, system will stay muted when locking or unlocking. Horn output will only sound in alarming and programming mode. If the customer desires audio chirp notifications for vehicle's arming status, connect a siren to the horn output (see Wiring Description) and change JP4 to "Siren Output" setting. Siren and Parking Lights output as following:

	Horn Output	Siren Output	Parking Light
Unlock	-	2 x	2 x
Lock	-	1 x	1 x
Remote Start	-	1 x	1 x

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PROGRAMMABLE FEATURES (CONT.)

Ignition-Controlled Door Lock

Enabled by default and controlled by Brake input, this function will provide:

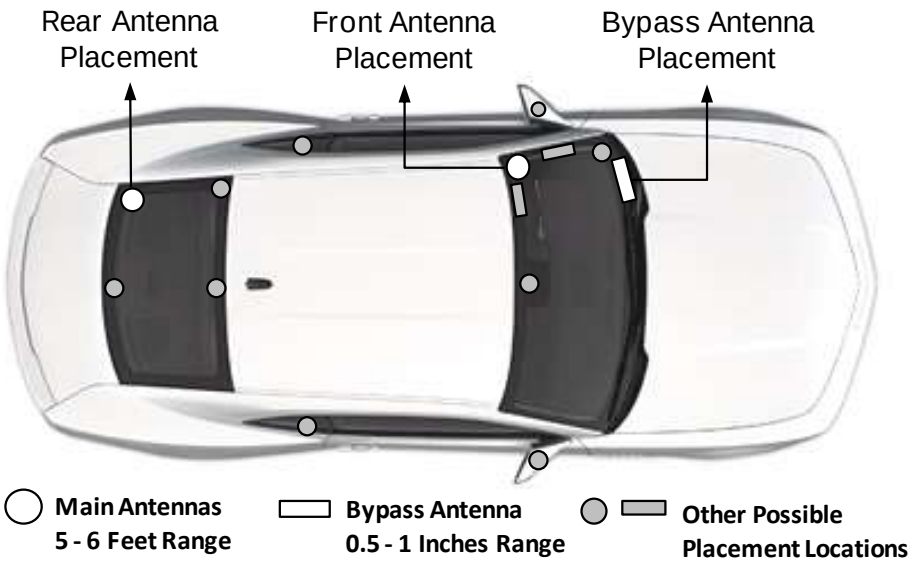
- Auto Door Locking when ACC is turned ON while brake is applied.
- Auto Door Re-Locking when brake applied after door opened-then-closed.
- Auto Door Unlocking when ACC is OFF.

To disable Ignition-Controlled Door Lock feature, press and hold the brake pedal when powering ON the controller. Horn output will sound 2x if this feature is disabled or 1x if this feature enabled.

ANTENNAS INSTALLATION

Antennas should be mounted on a Non-Enclosed and Non-Metallic material such as clear glass or plastic trim panels. Recommended placements for the Front-Antenna is on the top-left corner of the front windshield and bottom-left corner of the rear windshield for the Rear-Antenna. The Bypass-Antenna can be placed around the edge of the front windshield so it can sense the Bypass Transponder Card within one inch away from outside of the vehicle. Do not place antenna in locations that will be shield by metallic material.

Test for coverage and range after installation to determine the optimal locations for the antennas. You may adjust antenna positions to other possible placement locations as illustrated in the diagram. Use double sided tape to secure antennas after final positions are confirmed.



IMPORTANT

Antenna needs to be positioned away from any type of metallic material to achieve the best reception in all directions. Avoid strain/pull on antenna wiring and do not bend or overlap Main antenna with Bypass antenna.

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FAQ

Why is key detection not working or the range is very sort?
Verify antenna position: Antenna may be on or close to metallic material, change position to verify range sensitivity. Check antenna wiring, do not pull on the antenna wires, make sure connectors are firmly seated. If remote failed to work both in proximity and manually press the buttons, follow key programming procedure to relearn all keys.

What does each LED color status mean?
See User Manual for more information on LED status detail.

How to install this system without the alarm function?
See User Manual for more information on disable alarm function.

How to enable/disable automatic door locking/unlocking function?
Please follow "Ignition-Controlled Door Lock" under the programmable features section to enable/disable this function.

How does Remote Start button on the Smart Key remote work?
Remote Start function require installing the optional Advanced Keys Push-Start System (AK-PSB05). Press the remote start button will send a remote start signal to the Push-Start Module via the Push-Start Module Control output. Please refer to Push-Start Installation manual for more info on remote start the vehicle.

KEY PROGRAMMING PROCEDURE

If required, use the following procedures to program a new set of Smart Key and/or Bypass Transponder Cards. Both set of Smart Keys or the Bypass Transponder Cards must be present and accessible during programming.

Enter Programming Mode

Disarm the system by a valid Smart Key or Bypass Transponder Card. Turn the Ignition Key to the ACC position. After few seconds switch the Ignition Key to OFF position and immediately back to ACC position for five times or as following: OFF−ACC−OFF−ACC−OFF−ACC−OFF−ACC−OFF−ACC. Keep the Ignition Key in ACC position at the fifth time and the horn will sound twice. (Turn the Ignition Key to OFF position at any time will exit the programming mode with horn sound three times)

Smart Key(s) Programming

1. After enter the Smart Key programming mode, LED indicator turns RED. You have 30 seconds window to program. If you do not wish to program Smart Keys, press the brake pedal once to skip to Bypass Transponder Cards programming (Horn will sound once to confirm)
2. Press and hold the LOCK button on the first Smart Key until horn sound once.
3. Press and hold the LOCK button on the second Smart Key until horn sound once.
4. Smart Keys programming is now completed. System will automatically enter Bypass Transponder Cards programming mode.

Bypass Transponder Cards Programming

1. After enter the Bypass Transponder Card programming mode, LED indicator turns BLUE. You have 12 seconds window to program. To skip Bypass Transponder Cards programming, press the brake pedal once will end the programming mode with horn sound five(5) times.
2. Hold first Bypass Transponder Card against the reading field of the Backup Antenna until the horn sound once.
3. Repeat for the second Bypass Transponder Card until the horn sound five(5) times to indicate key programming has been successfully completed.

Note: Only one Bypass Transponder Card should be sensed in the reading field at a time. The sensing range for the Bypass Antenna is under an inch.

Horn Sound Summary Table

Number of Horn Sound	Mode Description
1 x	Remote / Key Registered
2 x	Entered Programming mode
3 x	Programming failed
5 x	Programming successful

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CLOSING UP

- Connecting the wire harnesses and power ON the controller, check and confirm system operations (Refer to User Manual) then verify functions of the vehicle are in working order.
- Make sure all wiring connection are insulated properly. Place and secure control units to locations inside trim panels and bundle all lose wiring. Put back all trim panels
- When mounting the controller unit in the vehicle, consider the location carefully. You should make sure that you avoid any location where the controller is exposed to moisture, extreme heat or interfere with moving parts on the vehicle which hampers driving.
- Explain all functions related to the end-user of this system.

REFERENCES INFORMATION

PRODUCT SPECIFICATIONS

Controller operating voltage range: ..... 10 VDC – 16 VDC
Controller Stand by power: ..... ≤ 30mA @ 12 VDC
Avg. controller operating power: ..... ≤ 80mA@12VDC
Devices operating temperature range: ..... -25°C – +85°C
Transmitter operating voltage range: ..... 2 VDC – 4 VDC
Transmitter Stand by power: ..... ≤ 7 µA @ 3 VDC
HF operation frequency and range: ..... 433.92MHz @ 25 - 30 Meters
LF operation frequency and range: ..... 134.2 KHz @ 1.5 - 2 Meters
Smart Key Fob Dimensions: ..... 65mmL x 44mmW x 6mmH
Base Controller Dimensions: ..... 115mmL x 90mmW x 30mmH

PRODUCT REGISTRATION

Installer of this system to is requested to fill out the following information as a proof of installation to the end-user of this system. For manufacture warranty to take immediate effect please request the end-user to update the following information at: *http://www.advancedkeys.com/registration.htm*

Company / Installer Name:		Phone Number:
Installer Address:		Date of Installation:
Vehicle Manufacture:	Model:	Year:
Front Antenna Location:	Rear Antenna Location:	Bypass Antenna Location:

Interface/Bypass Module Used: YES ☐ NO ☐ If YES specify bypass make/model:	All Smart Keys and Bypass Cards Working: YES ☐ NO ☐ Push-Start Module Installed: YES ☐ NO ☐ Antenna Mounted on Windshields: YES ☐ NO ☐ Reviewed Product Operation with End-User: YES ☐ NO ☐

Additional Comments:

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